

FREQUENCIES VHF, UHF, SHF NEWSLETTER

NZ

This newsletter is compiled by Kevin Murphy ZL1UJG to promote operational and construction activity on the VHF, UHF and SHF Amateur Radio allocations in New Zealand (and overseas).

Newsletter Articles may be sent via email to rfman@extra.co.nz

Post to K Murphy, 8 Tamar Place, Hamilton, New Zealand.

Ph 07 8470041

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VHF Scene Sept/Oct 2005

Please Acknowledge NZART/Break In/VHF Scene if using material in other publications.

There is lots of news on the microwave front, but less on other activities. With the weather improving I look forward to seeing more column information. During the Hamilton Market Day on 10th September, 2005, I spoke to a number of people who provide material for the column. There were many bargains to be gained, and of course the social aspect of Market Day's (Junk Sales) plays an important part. I also took the chance to congratulate Brian and Steve on their recent Microwave activities, and to view some the equipment constructed for these bands. Very impressive.

Microwaves

At the start of 2005, Both Brian, ZL1AVZ and Steve, ZL1TPH discussed moving above 10GHz and become operational on 24GHz, 47GHz and 76 GHz..

There was four reasons for this

- 1 To become active on these bands, so as to give NZART an account of activity in this spectrum allocation.
- 2 To activate more microwave interest in contests.
- 3 To challenge the distance NZART records.
- 4 To have construction projects on the bench.

On Sunday 21st August, 2005 Brian, ZL1AVZ and Steve, ZL1TPH exchanged SSB signals on the 24 GHz band over a 50 km distance. Signals were good copy with 59 reports. Testing from numerous sites around Auckland, gave 59+ signals off Auckland City landmarks, while the direct paths were often much weaker, or not at all. Note that a wavelength at 24GHz is only 12mm and reflections can be very good.

On Saturday 27th August, 2005 Brian ZL1AVZ worked Steve, ZL1TPH on 24GHz at 142km. Frequency was 24048.100MHz with an easy 55 exchange on SSB. Also a CW contact at 555 both ways. Steve, ZL1TPH used a ZC-1 key at 12WPM with no side tone, only key clicks. An application for a new 1.2cm ZL distance record has been sent to the record keeper.

Brian operated from Muriwai while Steve made the 2 ½ hour drive north to Maunganui Bluff. Driving north it was rain scatter material above and Steve had his doubts. Weather was overcast and very cold. Both 24 GHz transverters were 500 milliwatt TX with RX Noise Figures between 2 and 4 dB. Expected path losses were 163dB on the path profile, not including water vapour attenuation on the day. Precision 30cm (36dB gain) dishes with true cassigrain feeds were used at both ends. (Imported from the US) Brian transmitted first, however no signals were received at Steve's end while Steve panned the dish... Brian knew the direction of Maunganui Bluff from Muriwai from many years of contesting and dxing from that site. He suggested that Steve should TX. Using an ICOM IC202 as the 24 GHz transverter IF, Steve put a carrier on. It only took a second for Brian to find the signal and then dish alignment began. There was a high level of QSB on the path, and signals were 20dB down on 10368MHz. Note that the signals on 10368 MHz were 59 +. This completes a three month joint construction project and thanks to the many that assisted.

In the upcoming NZART contests they hope that more contacts may be made on the 24 GHz bands and encourage others to populate the Microwave bands.

Other images may be viewed at <http://groups.yahoo.com/group/zlvhfcontest/>. In addition to VHF contest related activity, this site from time to time has news of other activities such as outlined above.

Steve, ZL1TPH is also looking at the 76 GHz band and has been sampled a number of 100GHz anti-parallel diodes and once fitted to mixer PCB's there may be some results. (These diodes are ~ 0.6mm by 0.3mm !!). 96GHz (and 12 GHz) to 38GHz multipliers are available surplus from the USA. These together with 12 GHz oscillator/multipliers are being used for the local oscillator. The anti-parallel diodes are pumped at half the output frequency (~38 GHz) and mixed with a 144 IF to give a RX/TX DSB on 76GHz. Hopefully with results out of the first unit we can then build another. (Steve ZL1TPH)

Great news from both of you, and congratulations on the new 24 GHz record and a great result from your construction efforts. The VK 24 GHz record stands at ~201km, so we look forward to hearing contacts exceeding that distance. An amateur in South Auckland has offered his QTH as a possible location for achieving that distance.

W6QI and AD6FP, in the Los Angeles area of California, US have recently extended the 47 GHz world record to 313 km. AD6FP has a 30 watt Tx while W6QI has about 10 mW. The signal received at W6QI was 40 dB over the noise, while at AD6FP the signal was 8 dB above the noise. No doubt the record will be extended further if another high power Power Amplifier becomes available.

Scott, ZL1KB is working on improving his DEM 13 cm transverter. These were originally designed for a 2304 MHz allocation and suffer from high spurious, if used on the NZ 2424 MHz allocation (as is). After consulting the scribe, Scott shortened some hairpin filters to raise their frequency. Additional tuning of the etched mixer improved oscillator rejection by an additional 30 dB. An additional filter is being built and a 2400 MHz RX/TX Amplifier (DSE) will be used to extend performance. A loop Yagi will be used as the primary antenna, via parts from Harry, ZL1BK. During the Hamilton Market Day, I had the chance to see some of Harry's workmanship on some 23cm loop Yagi's for ZL1TAP and was very impressed.

There has been some interest in the loan transverters for 2424 MHz as mentioned in the previous column. Dave, ZL1AKW, Tauranga is looking at becoming active on 2424 MHz, as is another Auckland station. Simon ZL1SWW is working on his 1296 MHz transverter and has integrated a Mitsubishi FET Power block. There are some stability issues that are being investigated. A station in Hamilton, is looking at building the Minikits 1296 MHz transverter, so I will keep the readers informed on further news.

Ian ZL1AOX, South Auckland worked Steve ZL1TPH, Orewa on 5760 MHz SSB over ~ 70km. Ian is QRV on 5760 MHz and is looking for contacts. Ian has 5 watts and a 20dB horn, while Steve has 5watts to a 23 dB horn. What is interesting is that both stations operated from their home QTH's. Signals were RS 51 to 52 with surging QSB. The QTH at the Orewa end is at sea level, with obstructions towards the Auckland area. The 5 watt amplifiers are from the Trading table of the Wellington VHF Group. The current 5760 MHz NZ record was done with 500 mW transmitters, so it is possible that the record could be pushed further with the higher TX power available now.

Ray, ZL2TAL in New Plymouth is now operational on 3399 MHz.

EME

A report from Bob ZL3TY :- Plenty of activity on 2m EME here. I had 40 QSOs in July to 17 countries, including ZZ2RED in Brazil. Another interesting QSO was with OK1TEH who was using a 12 element yagi and only 100W, we had several skeds before a successful QSO. In August I had 15 QSOs including VK9CMO, Cocos Island, operator is Rex VK7MO. All except 2 QSOs used JT65b digital mode, the other 2 were my first 2m EME QSOs using CW.

Chris ZL2DX completed a 70cm EME QSO with N9AB in August. Chris was using JT65C and runs a single Yagi and 100W, N9AB has a big station.

Meteor Scatter

Bob also reports on 2m meteor scatter skeds. These continue each weekend. I have had several completed QSOs with David ZL1BT, in Auckland. We now have several regular participants including ZL1BT, ZL2DX, ZL3TY, ZL4LV and a number of listeners. The skeds are each Saturday and Sunday morning, 8am to 9am local time, on 144.230MHz using FSK441B. Anyone wanting to be kept up to date with these activities, please email me at zl3ty@nzart.org.nz

ATV

A Uniden Satellite Receiver is now the default receiver for the 23cm Nihotupu input. The Input video frequency is 1283 MHz and sound is 6.0 MHz. A 23cm filter loaned from Grant ZL1WTT is tuned to 1283MHz/16Mhz wide. This will stop the Sync Detector Trigger caused by the narrow deviation receiver

which opens to unwanted signals. Further information may be gained at <http://groups.yahoo.com/group/akatv/>

Beacons

The Auckland VHF Group Beacons, ZL1VHF on 2m, and ZL1UHF on 70cm, are off the air, as of 30th August, 2005. These beacons are having their frequencies changed to 144.253 MHz and 432.253 MHz. The beacons are expected to become operational again near early October.

Keep an ear on distant beacon frequencies, as enhanced propagation may occur at different times of the year. Rain Scatter/ thunderstorms are used extensively in the US and UK as a propagation mode for microwave signals, during the wetter months. The summer months brings ducting, such as down coastal areas, which can significantly enhance propagation. During the times of sunrise and sunset, temperature changes often bring improvements in signal strengths. I have heard repeaters from the central North Island, and as far as Napier, during these times. (My QTH is in Hamilton, and the RF path to the South, goes straight into a 30-50 foot obstruction at the end of the garden.)

Digital Modes

Joe, K1JT is pleased to announce the beta release of WSJT version 5.8.1. This is a major revision of WSJT, with many new features. To download go to the WSJT Home page, <http://pulsar.princeton.edu/~joe/K1JT/>

6m

Colin, ZL2CMC, (ex ZL2TFK) in Hamilton, has worked a number of stations via the Auckland 6m repeater, and coverage appears very good, with some stations using hand portables such as FT817. On leaving the Hamilton Market Day, Tim, ZL1TN showed me the excellent copy that the Auckland 6m repeater was giving in the Waikato. Even in Auckland, coverage was gained in some areas where 2m was unusable

Thanks to those readers who provided input for the column. I am always after further material. This may be sent to rfman@xtra.co.nz



Image of the 24 GHz station of Steve ZL1TPH.

Results of the Brass Monkey Contest July 2/3 2005

Band	Station	Points	Location
2 m (144 MHz)	ZL1TPH	315	Moirs Hill RF73HM
	ZL2KA	187	Stratford Plateau
	ZL1AOX	140	Papakura RF72MV
	ZL1SWW	92	Pine Hill RF73IG
	ZL2MA	71	Maxwell
70 cm (432 MHz)	ZL1TPH	151	Moirs Hill RF73HM
	ZL1AOX	110	Papakura RF72MV
	ZL1SWW	71	Pine Hill RF73IG
	ZL2KA	3.6	Stratford Plateau
23 cm (1296 MHz)	ZL1TPH	270	Moirs Hill RF73HM
	ZL1AOX	213	Papakura RF72MV
	ZL1SWW	175	Pine Hill RF73IG
13cm (2304 MHz)	ZL1TPH	432	Moirs Hill RF73HM
	ZL1SWW	319	Pine Hill RF73IG
9cm (3400MHz)	ZL1AOX	1212	Papakura RF72MV
	ZL1TPH	684	Moirs Hill RF73HM
3cm (10GHz)	ZL1TPH	162	Moirs Hill RF73HM
Aggregate Scores	ZL1TPH	1886	Moirs Hill RF73HM
	ZL1AOX	1675	Papakura RF72MV
	ZL1SWW	657	Pine Hill RF73IG
	ZL2KA	319	Stratford Plateau
	ZL2MA	71	Maxwell

GREATEST DX	2 m	ZL1TPH	ZL2KA	315km
	70 cm	ZL1TPH	ZL2IP	310km
	23 cm	ZL1TPH	ZL1AKW	195km
	13cm	ZL1TPH	ZL1BK	60km
	9cm	ZL1TPH	ZL1AOX	80 km
	3cm	ZL1AVZ	ZL1TPH	45km
ACTIVE STATIONS 23				
	ZL1ACT	ZL1KM	ZL1TPH	ZL2JL
	ZL1AKW	ZL1SWW	ZL1TWR	ZL2MA
	ZL1BK	ZL1TAP	ZL2AFV	ZL2PH
	ZL1CT	ZL1TBG	ZL2DX	ZL2SP
	ZL1ICC	ZL1TGC	ZL2IP	ZL2UPH
	ZL1IU	ZL1TMB	ZL2JC	

Next VHF/UHF Contest:- Cliff Betson, Memorial Contest

All bands 50 MHz and up. Aligned with the Ross Hull Field Day, usually the second weekend in January.

The rules were published in September/October 2000 Break-In. The rules are also available at:

www.nzart.org.nz/nzart/update/contests/vhfcontestrules.html

All contest logs should be sent, to arrive within TWO WEEKS, to:

Contest Manager, Wellington VHF Group, P.O. Box 12-259, Thorndon, Wellington.